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[QUERY. How interpret the second result? M. A. G.]

[NOTE.—The answer to this query is simply this: The second result is not geometrically interpretable, for the reason that the negative value of  $x$  from which it is derived, is not geometrically interpretable. The negative value of  $x$  satisfies the algebraic condition expressed by the equation and that alone. Ed. F.]

III. Solution by J. K. ELLWOOD, A. M., Principal of Colfax School, Pittsburgh, Pa.; COOPER D. SCHMIDT, A. M., Professor of Mathematics, University of Tennessee, Knoxville, Tenn.; and CHARLES C. CROSS, Libertytown, Md.

The diagonal of a square=the side  $\times \sqrt{2}$ .

$\therefore$  side  $\times \sqrt{2}$  = side + 10 rods, or side  $(\sqrt{2}-1)$  = 10 rods, and side =  $10 \div (\sqrt{2}-1)$ .

Hence  $[10/(\sqrt{2}-1)]^2 \div 160 = 3.64 +$ , the number of acres.

97. Proposed by J. A. CALDERHEAD, M. Sc., Professor of Mathematics, Curry University, Pittsburgh, Pa.

In what time will \$4000 amount to \$5134.96, interest at 6% payable annually?

Solution by WILLIAM W. CHAMPLAIN, Wickford, R. I.

The time is evidently between 4 and 5 years.

The interest on \$4000 for 4 years, at 6% is	\$960.00
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The interest on \$240 for (3+2+1) years=6 years is	86.40
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\$1046.40

\$1134.96 - \$1046.40 = \$88.56, the interest on \$4000 for the number of months and days exceeding 4 years, plus the interest on four unpaid installments of annual interest for the same period; that is, on \$4000 + \$960 or \$4960. Interest on \$4960 at 6% for one year is \$297.60; to gain \$88.56 it would require  $\frac{88.56}{297.60}$  of a year, or 3 months, 17.13 days.

$\therefore$  \$4000 would amount to \$5134.96, at 6% annual interest in 4 years, 3 months, 17.13 days.

Also solved by G. B. M. ZERR, and P. S. BERG.

98. Proposed by J. SCHEFFER, A. M., Hagerstown, Md.

A poor man borrowed \$20 which he repaid in eleven monthly installments of \$2 each; what was the annual rate of interest (reckoned as simple interest)?

Solution by HON. JOSIAH H. DRUMMOND, LL. D., Portland, Me.

The last installment would be paid in eleven months, which, therefore, would be the time the \$20 would be on interest, and the interest would be  $\frac{11}{12} \times 20 \times$  rate. The first installment would be on interest 10 months, and the interest on the installments would be  $\frac{55}{12} \times 2 \times$  rate. Then  $\frac{55}{12}$  times the rate less  $\frac{11}{12}$  times the rate would be \$2, or \$2 is  $\frac{1}{12}$  times the rate. Hence the rate is  $21\frac{9}{11}\%$ .

Also solved by WALTER H. DRANE.

[NOTE. P. S. Berg solved problem 95, but his solution reached us too late for credit in last issue. Problem 99, should read, "How many cats will catch 100 rats in 100 minutes?" Ed. F.]